

Appl. No. 10/597,470
Amdt. Dated March 15, 2010
Reply to Office Action of October 15, 2009

Attorney Docket No. 81863.0056
Customer No.: 26021

REMARKS/ARGUMENTS

Minor changes are made to this specification. Claims 1-41 are amended. Claims 1-41 are pending in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

Priority

The Office Action acknowledges Applicant's claim of priority is acknowledged; however, the Office now states that applicant has not filed a certified copy of the priority document. Applicant respectfully requests clarification because this is inconsistent with the Office's prior Notification.

Specifically, Applicant notes that this is a National Stage filing of International Application No. PCT/JP2005/000972. Applicant timely requested that the International Bureau transmit a copy of the priority document to the national stage patent offices. Moreover, the Notice of Acceptance of Application mailed June 16, 2006 stated "The following items have been received:...Priority Documents filed on 7/26/2006..." It therefore appears that the priority document has already been acknowledged by the Office as having been received. Clarification is therefore requested.

Claim Objections

Claims 1-41 stand objected to for various informalities.

Claims 1-41 stand objected because the claims do not have a "." At the end of each claim. In response, Applicant has amended claims 1-41 to include a "." at the end of each claim. Withdrawal of the rejection is respectfully requested.

Claims 22 and 38 stand objected to because the Office contends that the phrase "the anterior surface" should be "an anterior surface." In response,

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Applicant has amended the claims in the manner suggested. Withdrawal of the objection is respectfully requested.

Claim 40 stands objected to because the Office contends the phrase "the above-mentioned step (a)" should be "the above-mentioned step of (a) dispersing." Applicant disagrees that the original phrase is in any way incorrect or objectionable. However, to advance prosecution, applicant has amended the phrase in the manner suggested by the Office with the understanding that the phrase merely corrects an informality and does not change the scope of the claim. Withdrawal of the rejection is respectfully requested.

Claim Rejections—35 U.S.C. § 112

Claims 1-41 stand rejected under 35 U.S.C. 112, second paragraph because the office contends that the claims are indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the Office contends that the term "as" in front of "phosphors" renders the claim indefinite because is unclear whether the limitations following the term are part of the claimed invention. Claims 2-21 and 41 are rejected "due to claim dependency." In response, Applicant has amended claim 1 to remove the word "as" in font of "phosphors." Withdrawal of the rejection as to claims 1-21 and 41 is respectfully requested.

Regarding claim 2 and 23, the office contends that the limitations "a resin matrix" and "a plurality of wavelength conversion layers" lack sufficient antecedent basis for this limitation in the claims. Claim 16 is rejected "due to claim dependency." In response, independent claims 1, 2, 21 and 23 are amended and, as amended, the phrase "a resin matrix" appears in dependent claims claim 2 and 23 but not the independent claims 1 and 22, respectively. Thus, the use of the term "a

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resin matrix" is proper since this is the first use of the term in the claims depending from independent claims 1 and 22.. Withdrawal of the rejection is respectfully requested.

Regarding claim 17, the office contends that claim is indefinite because it is unclear which part the term "a refractive index" refers to.

Regarding claim 22, the Office contends that the term "as" in front of "phosphors" renders the claim indefinite because is unclear whether the limitations following the term are part of the claimed invention. Claims 23-37 are rejected "due to claim dependency." In response, Applicant has amended claim 22 to remove the word "as" in front of "phosphors." Withdrawal of the rejection as to claims 22-37 is respectfully requested.

Regarding claim 38, the Office contends that the term "as" in front of "phosphors" renders the claim indefinite because is unclear whether the limitations following the term are part of the claimed invention. Claim 38 has been amended to remove to the term "as" from in front of "phosphors" and to clarify that all limitations following "phosphors" are part of the claimed invention.

Regarding claim 39, the office contends that there is insufficient antecedent basis for the limitations "the molded product" and "the sheet" in the claim. The phrases "a molded product" and "a sheet" have been added to claim 39 at appropriate place to provide antecedent basis for these terms. Withdrawal of the rejection is respectfully requested.

Claim Rejections—35 U.S.C. § 103

The claims stand rejected under 35 U.S.C. 103(a) as being unpatentable as obvious on the following bases:

1. Claims 1-5, 10, 16-27, 31-36, 38, 39 and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho (US 2004/0217692) in view of Maeda (US 2004/0104391);

2. Claims 6, 11, 15, 28-30 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho (US 2004/0217692) in view of Maeda (US 2004/0104391 and further in view of Thurk (US 2004/0245912);

3. Claims 7-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho (US 2004/0217692) in view of Maeda (US 2004/0104391) and Thurk (US 2004/0245912) and further in view of Tanaka (US 2004/0067849);

4. Claims 12-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho (US 2004/0217692) in view of Maeda (US 2004/0104391) and Thurk (US 2004/0245912) and further in view of Manabu (JP 2002-121548); and

5. Claim 40 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho (US 2004/0217692) in view of Maeda (US 2004/0104391) and further in view of Manabu (JP 2002-121548).

Claims 1-5, 10, 16-27, 31-36, 38, 39 and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho (US 2004/0217692) in view of Maeda (US 2004/0104391). All the claims have been amended. By way of example, Claim 1, as amended, is as follows:

A wavelength converter, comprising a plurality of wavelength conversion layers comprising a first wavelength conversion layer (A) containing phosphors comprising at least one type of semiconductor ultrafine particles having a mean particle size of not more than 20 nm, and a second wavelength conversion layer (B) containing phosphors comprising at least one type of fluorescent substance having a mean particle size of not less than 0.1 μm .

Applicant respectfully submit that the cited art cannot render obvious. Specifically, nothing in the cited art, either alone, or in combination teaches or suggests, at least, a wavelength converter having "a first wavelength conversion layer (A) containing phosphors comprising at least one type of semiconductor ultrafine particles having a mean particle size of not more than 20 nm, and a second wavelength conversion layer (B) containing phosphors comprising at least one type of fluorescent substance having a mean particle size of not less than 0.1 μm " as required by amended claim 1. The same or analogous limitations are included in independent claims 22, 38 and 39.

Cho is generally directed to a light-emitting device includes a light source outputting an excitation light and a fluorescent multilayer having at least two fluorescent layers emitting different wavelengths in response to the excitation light. (Cho, Abstract). In Cho, the fluorescent layer emitting a longer wavelength and/or having a lower light conversion efficiency than other fluorescent layers is adjacent to the light source. *Id.*

However, the Office recognizes that Cho fails to disclose a wavelength converter comprising a plurality of wavelength conversion layers comprising a wavelength conversion layer (A) containing phosphors comprising at least one type of semiconductor ultrafine particles having a mean particle size of not more than 20 nm in a resin matrix, and a wavelength conversion layer (B) containing at least one type of fluorescent substance (phosphors) having a mean particle size of not less than 0.1 μm . (Office Action, p. 4)

Applicant respectfully disagrees that Maeda discloses the the two layered structure as required by present claim 1. Maedo discloses a phosphor comprising a fluorescent substance having a mean particle size of not less than 0.1 μm . (See e.g., Maeda at para. [0040]) However, Maeda does not disclose "a first wavelength

conversion layer (A) containing phosphors comprising at least one type of semiconductor ultrafine particles having a mean particle size of not more than 20 nm." The semiconductor ultrafine particles used in Maeda are nonluminescent silicon dioxide powder and aluminum oxide (see Paragraphs [253]-[254]). As such, they are not phosphors comprising semiconductor ultrafine particles as required by amended claim 1.

Nor would it have been obvious to modify the references to arrive at the present invention. The semiconductor ultrafine particles are used by Maeda to prevent sedimentation by the phosphor particles in the phosphor of Maeda:

the sedimentation speed of ultra-fine particles with an extremely small particle radius is extremely low in a phosphor paste. Accordingly, if such ultra-fine particles are included in the phosphor paste, the ultra-fine particles, which sediment extremely slowly; act in such a manner as preventing sedimentation of the yellow/yellowish phosphor particles 2. As a result, by adding the ultra-fine particles to the phosphor paste, the sedimentation speed of the yellow/yellowish phosphor particles 2 in the phosphor paste decreases, so that the luminescent layer 3 having a structure in which the phosphor particles are dispersed in the resin is easily obtained. (Maeda, at para. [0253])

Nothing in Maeda teaches or suggests that the ultrafine particles described therein are or could be used as phosphors as required by amended claim 1. Moreover, as discussed in applicant's specification at for instance para. [0084]-[0085] and as claimed, the ultrafine particles and the fluorescent are in different layers of the wavelength converter whereas Maeda adds the ultrafine powder to ensure that the "phosphor particles are dispersed in the resin." As such, one of ordinary skill in the art would not have had any motivation to use ultrafine particles to arrive at the layered structure of the present invention because Maeda teaches the use of ultrafine layers prevents sedimentation of the phosphor particles.

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For these reasons applicant respectfully submits that independent claims 1, 22, 38 and 39 as amended patentably distinguish over Cho in view of Maeda. Claims 2-5, 10, and 16-21 depend from claim 1 either directly or indirectly and are patentable for at least the same reasons as claim 1. Claims 23-27 and 31-36 depend from claim 22 and are patentable for at least the same reasons as claim 22. Claim 41 depends from claim 39 and is patentable for at least the same reasons as claim 39. Withdrawal of the rejection and allowance of claims 1-5, 10, 16-27, and 31-36, 38, 39 and 41 is respectfully requested.

Dependent claims 6, 11, 15, 28-30 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho in view of Maeda and further in view of Thurk. Thurk is cited for the teaching of a wavelength converter having semiconductor ultrafine particles having surfaces coated with surface modifying molecules. (Office Action at p. 14) Nothing in Thurk cures the deficiencies already identified with respect to Cho in view of Maeda. As such, claims 6, 11, 15, 28-30 and 37 are patentable for at least the same reasons as independent claims 1 and 22. Withdrawal of the rejection and allowance of claims 6, 11, 15, 28-30 and 37 is respectfully requested.

Claims 7-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho in view of Maeda and Thurk and further in view of Tanaka (US 2004/0067849). Claims 7-9 are amended. Tanaka is cited for the teaching of a light emitting device including bonding ultrafine particles with silicon oxygen bonds for the purpose of increasing bonds between ultrafine particles thereby dispersing the particles in homogenous manner. (Office Action at p. 17) Nothing in Thurk cures the deficiencies already identified with respect to Cho in view of Maeda and further in view of Thurk. As such, claims 7-9 are patentable for at least the same reasons

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as independent claims 1. Withdrawal of the rejection and allowance of claims 7-9 is respectfully requested.

Claims 12-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho in view of Maeda and Thurk and further in view of Manabu (JP 2002-121548). Manabu is cited for the teaching of a wavelength converter including surface modifying molecules as explained more specifically in the office action at p. 18. Nothing in Manabu cures the deficiencies already identified with respect to Cho in view of Maeda and further in view of Thurk. As such, claims 7-9 are patentable for at least the same reasons as independent claims 1. Withdrawal of the rejection and allowance of claims 7-9 is respectfully requested.

Claim 40 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho in view of Maeda and further in view of Manabu. Manabu is cited for the teaching of a wavelength converter as explained more specifically in the office action at pp. 19-20. Nothing in Manabu cures the deficiencies already identified with respect to Cho in view of Maeda. As such, claim 40 is patentable for at least the same reasons as independent claims 39. Withdrawal of the rejection and allowance of claim 40 is respectfully requested.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310)785-4600 to discuss the steps necessary for placing the application in condition for allowance.

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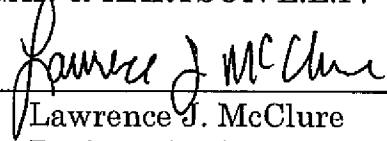
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If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: March 15, 2010

By: _____



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